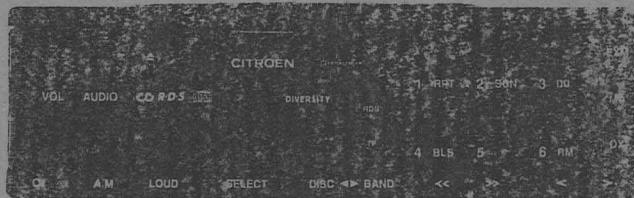


clarion Service Manual

Published by Service Information Section



CITROEN Automobile Genuine LW/MW/FM-MPX Synthesizer Radio Cassette Combination

Model PU-9594A-D
(Genuine No. PC302C)

SPECIFICATIONS:

• Radio section

Circuit system:	Superneterodyne
Tuning system:	Electronic tuning
Receive range:	LW 153kHz to 281kHz MW 531kHz to 1,602kHz UKW(FM) 87.5MHz to 108.0MHz
Intermediate frequency:	LW 450kHz MW 450kHz UKW(FM) 10.7MHz
Quieting sensitivity: LW	Less than 39dB (at 20dB S/N)

MW	Less than 32dB (at 20dB S/N)
UKW(FM)	Less than 12dB (at 30dB S/N)
Separation:	UKW(FM) More than 20dB
Auto tuning stop sensitivity:	LW DX 30±10dB LO 50±10dB

MW	DX 30±10dB LO 50±10dB
UKW(FM)	DX 25±10dB LO 45±10dB

• Tape section

Reproduction system:	4 track, 2 channel stereo cassette tape playback
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Tape speed:	4.76cm/sec. (1-7/8 ips)
Wow and flutter:	Less than 0.18% (W.R.M.S.)
S/N ratio:	NORM (120μs) More than 48dB (00 OFF) More than 56dB (00 ON)
MTL (70μs)	More than 50dB (00 OFF) More than 58dB (00 ON)
Cross talk:	More than 40dB
Separation:	More than 30dB
FF/REW time:	Less than 130sec (C-60)

• Synthesis

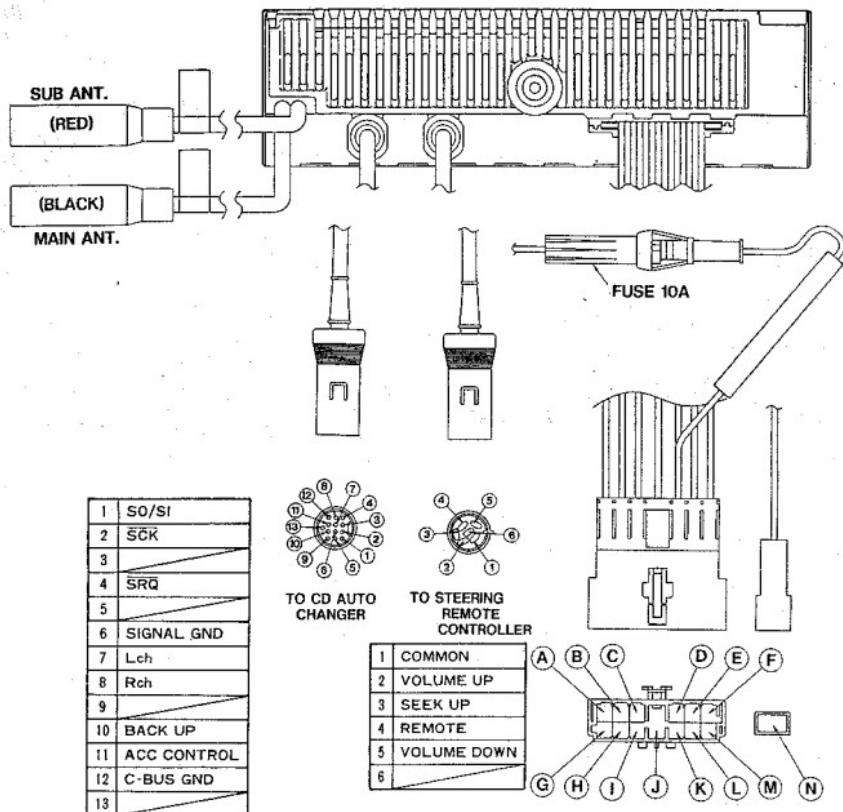
Power supply voltage:	DC 13.2V (10.8V to 15.6V) Negative ground
Current consumption:	Less than 10A
Lead impedance:	4Ω×2, 4Ω×4
Power output:	More than 12W×2 (at max. output)
Dimensions:	Width 178mm Height 50mm Depth 160mm
Weight:	1.7kg

• Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
DOLBY and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

COMPONENTS:

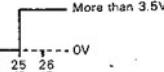
PU-9594A-D	1
Main unit	
Mounting bracket	300-9393-01

■ REAR VIEW AND CONNECTORS:

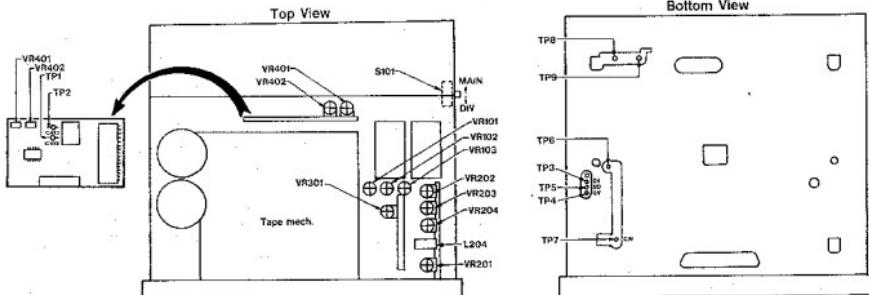


A	REAR SP Lch \ominus
B	FRONT SP Lch \ominus
C	ILLUMI-1
D	ACC
E	FRONT SP Rch \oplus
F	REAR SP Rch \oplus
G	REAR SP Lch \oplus
H	FRONT SP Lch \oplus
I	BACK UP
J	POWER ANT.
K	GND
L	FRONT SP Rch \ominus
M	REAR SP Rch \ominus
N	ILLUMI-2

■ADJUSTMENT:

Adjustment item	Adjustment point	Procedure	Diversity SW S101
Dolby NR	VR401 and VR402	Insert a Dolby level test tape (400Hz-200nWb/m), connect the milli-volt meter to TP1 and TP2, and adjust VR401 and VR402 to obtain an output of $388mV \pm 1dB$.	MAIN
OV	L204	1. Connect the digital voltmeter to TP3 and TP4. 2. Input the 98.1MHz/55dB signal and adjust the reading of digital voltmeter to $0V \pm 30mV$ by L204.	MAIN
Limiter	VR202	1. Input the 98.1MHz, 55dB SSG signal (400Hz, 30%). 2. Adjust Main VR to make the set output 0dB (0.775V). 3. Reduce the output of SG 10dB. 4. Adjust VR202 until output level decrease to 3dB.	MAIN
SD	VR204	1. Input the 98.1MHz/25dB signal (400Hz, 30%). 2. Adjust VR204 so that the voltage of TP5 is in the range 0V to 3.5V. 	MAIN
S-meter	VR103	1. Connect the digital voltmeter to TP6. 2. Input the 98.1MHz frequency at 30dB (no mod.) and adjust the level to $2.4V \pm 0.1V$ by VR103.	MAIN
SASC	VR203	1. Input the 98.1MHz/65dB, 7kHz modulation frequency, 30% modulation degree SSG signal. 2. Adjust the output level of the volume controller to 0dBm (0.775V). 3. Set the SSG output to 3dB and adjust VR203 so that the output level is -2dB.	MAIN
Separation	VR201	1. Input the 98.1MHz, connect the output of a stereo modulator to the external modulation terminal, and input a 65dB (1kHz, 100%) SSG signal. 2. Set the stereo modulator to the L or R ch and adjust VR201 so that the maximum separation is obtained. (More than 20dB)	MAIN
CW (Carrier Wave)	VR301	1. Input the 98.1MHz/55dB, 400Hz modulation frequency, 70kHz modulation rate SSG signal. 2. Connect the oscilloscope to TP7. 3. Adjust VR301 so that the waveform of TP7 is in the range 5V to 0V. (6.8kHz→High) 	MAIN
Diversity Main fix	VR102	1. Connect the digital voltmeter to TP8 and GND. 2. Input the 98.1MHz frequency at 20dB (400Hz, 30%) and adjust the level to $1.0V \pm 0.1V$ by VR102.	DIV
Diversity Sensitivity	VR101	1. Connect the digital voltmeter to TP9 and GND. 2. Input the 98.1MHz frequency at 15dB (7kHz, 100%) and adjust the level to $20mV \pm 3mV$ by VR101.	DIV

●ADJUSTMENT POINT



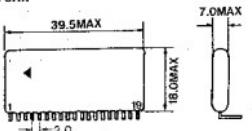
■ EXPLANATION OF IC'S:

*IC's other than explained below are described in Service Manual
"EXPLANATION OF IC's" Vol.2~Vol.4.

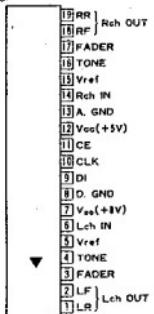
■ THA5001B 051-1516-32 EV2000-2 051-1516-22 Electronic Volume Control

051-1516-22 and 051-1516-32 have mutual changeability.

Outward Form



Terminal Connection



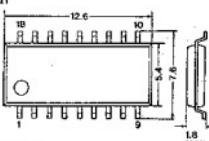
Electrical Characteristics

($T_a = -25^\circ C$, $V_{dd} = 8V$, $Vcc = 5V$, unless otherwise specified, Volume - Tone - Fader, 0dB)

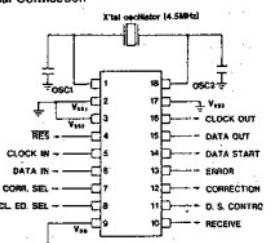
Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Tone effect	T81	Boost : +14dB	+9	+10	+12	dB
	T82	Bass : -14dB	-12	-10	-8	dB
TREBLE boost	T71	1mHz : +14dB	+8	+10	+12	dB
	T72	1kHz : +14dB	-12	-10	-8	dB
Loudness effect	L01	f=100Hz Volume : -20dB	+6	+8	+10	dB
	L02	f=10kHz Loudness OFF:ON	+5	+7	+9	dB
Volume minimum	Vmin	Volume : -79dB	-76	-70	-65	dB
Fader minimum	Fmin	Fader : -nudl	-80	-70	-65	dB

■ LCL703M 051-1150-20 Sync/Error correction LSI for RDS

I. Outward Form



II. Terminal Connection



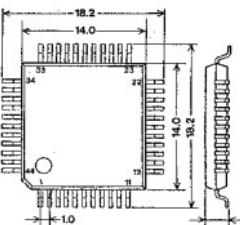
III. Terminal Connection Table

Pin No.	Symbol	Function
1	OSC 1	Connection terminal for crystal oscillator.
18	OSC 2	Allows connection of 4.5MHz crystal.
2	V _{ss}	
3	V _{ss}	
17	V _{ss}	Ground.
4	RES	Reset terminal.
5	CLOCK IN	RDS recovery clock input.
6	DATA IN	RDS recovery data input.
7	CORR SEL	Correction or non correction input for input signal.
8	CL. ED. SEL	Serial output clock polarity setting input.
9	V _{dd}	Power supply terminal (5V).
10	RECEIVE	After finishing a synchronous detection, while serial output is made, L level output is applied. In other cases, H level output.
11	D. S. CONTROL	Data start signal control input.
12	CORRECTION	Correction output terminal.
13	ERROR	Error output terminal.
14	DATA START	Block data start signal output.
15	DATA OUT	Data output for serial output.
16	CLOCK OUT	Clock output for serial output.

■ TAB172AF 051-1525-00 FM PROCESSOR

This IC is a FM tuner IC, which is integrated from IF to MPX stages into one chip.

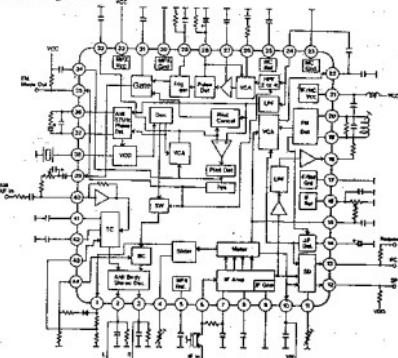
Outward Form



Function

IF IF limiter amplification/differential peak FM detection/signal meter/electric field strength reading/muting/station detection/IF counting request.
NC Noise detection/noise AGC/noise pass filter/noise pass filter wave changer/signal delay/adjusted pilot cancellation/signal holding
MPX Unadjusted PLL method/stereo decoder/blender control/tone control (low-cut, high-cut)/anti-ARI/anti-birdie.

Block Diagram

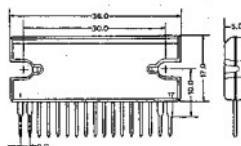


Terminal Connection

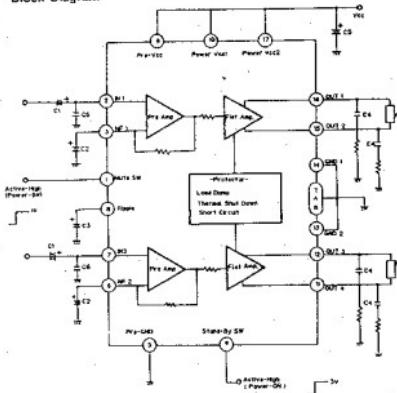
Pin No.	Symbol	Function
1	SD	Slider output terminal.
2	L out	MPX output terminal.
3	R out	
4	Slide	Blender of MPX unit, controllable range setting terminal for electric field strength of tone.
5	Ref. 3	3rd nominal voltage terminal.
6	IF in	IF amp. input terminal.
7	Bias	Provides bias to 8th pin via R.
8	By 1	IF amp. bypass terminal.
9	G 1	IF amp. ground terminal.
10	Meter	Meter output terminal in FM mode, and meter input terminal for slider circuit in AM mode.
11	SD	Sensitivity setting terminal of station detector.
12	SP	Pulse counting output terminal stopped by station detector.
13	IFC	IF counting output terminal.
14	ΔF	ΔF detector output smoothing terminal.
15	SM	Soft-mute characteristic setting terminal.
16	Ref 1	1st nominal voltage terminal.
17	G 4	Sub-straight ground terminal.
18	IF out	IF limiter amp. output terminal.
19	Det 1	Input terminal of differential peak detection.
20	Det 2	
21	B 1	Power terminals of IF and noise canceler units.
22	AF out	Audio signal output terminal.
23	G 2	Ground terminal.
24	NC in	Input terminal of noise canceler unit.
25	Ref 2	2nd nominal voltage terminal.
26	By 2	AGC amp. bypass terminal of noise canceler unit.
27	By 3	Noise amp. bypass terminal of noise canceler unit.
28	AGC	Noise AGC time-constant setting terminal of noise canceler unit.
29	PW	Trigger-pulse range setting terminal of noise canceler unit.
30	G 3	Ground terminal of MPX unit.
31	Gate	Composite signal holding gate terminal of noise canceler unit.
32	B 2	Power terminal of MPX unit.
33	P	Canceling signal output terminal for pilot cancellation.
34	PD3	Output terminal of pilot detection circuit.
35	Mode	Mode output terminal of stereo/mono selection.
36	PD1	
37	PD2	Output terminal of phase detection circuit.
38	VCO	VCO circuit oscillation terminal.
39	NC out	Noise canceler output terminal.
40	MPX in	MPX input terminal.
41	LC	Cut-off frequency setting terminal.
42	HC	
43	TC	Tone-control (low-cut, high-cut) control terminal.
44	BC	Blender control terminal.

■TA8210AL 051-1111-20 19W BTL×2ch Power Amp.

Outward Form

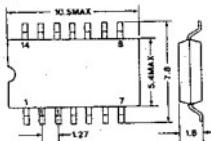


Block Diagram

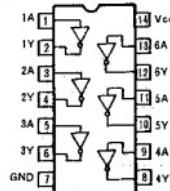


■TC74HC04AF 051-0859-05 HEX INVERTER

Outward Form



Block Diagram

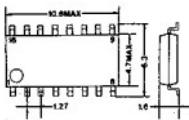


Truth Table

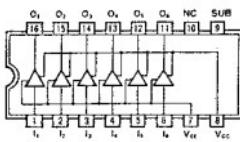
A	Y
L	H
H	L

TD62706F(CLAR) 051-0942-05 High Voltage Source Current Driver

Outward Form



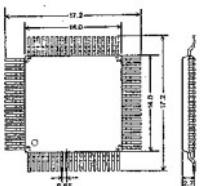
Block Diagram



PD75328GC-605-3B9 051-1380-20 Slave Micro Computer

051-1380-20 is a performance improved device of 051-1380-04.

Outward Form



Outline

- (1) The IC, as slave microcomputer, is to have function for data communication via serial bus interface with master microcomputer.
- (2) RDS decoder IC and synchronizing/correcting IC are controlled to input RDS data.

Terminal Connection

Pin No.	Terminal Name	I/O	Function
1~20		O	Unused (OPEN).
29	DK IND	I	ARI DK IND detection port. Active : LOW
30	SK IND	I	ARI SK IND detection port. Active : LOW
31	RDS IND	I	RDS IND detection port. Active : LOW
32	M6/M5	I	Detection port of M6/MS selection. High=M6, Low=MS
33	GND	I	
34	R/CD	O	RADIO/CD audio changeover port. High=RADIO, Low=CD Auto Changer
35	REMOTE	O	REMOTE Output port. Active : LOW
36	MUTE	O	MUTE Output port. Active : LOW
37	SRQ	O	Service Request Output port. Active : LOW
38	ACC DET	I	Detection port of ACC power ON/OFF (POWER DCP); master microcomputer controls ACC-CONT. High=ACC-ON, Low=ACC-OFF Active : High
39	SCK	O	Serial bus line SCK port.
40	SO	O	Serial bus line SO port.
41	SI	I	Serial bus line SI port.

Pin No.	Terminal Name	I/O	Function												
42	RDS CLK	I	RDS CLOCK input port. RDS data is input from LC7070												
43 44		I	GND												
45	PLL DO IN	I	PLL data input												
46	RDS DATA	I	RDS DATA input port. RDS data is input from LC7070												
47	RDS START	I	RDS DATA START bit input port. RDS data is input from LC7070												
48	RDS ERROR	I	ERROR LOW : Incorrectable error occurred. HI : No error occurred or corrected.												
49	RDS CORR	I	CORRECTION <table border="1" style="margin-left: auto; margin-right: auto;"><tr><th></th><th>CORR</th><th>ERROR</th></tr><tr><td>No error</td><td>H</td><td>H</td></tr><tr><td>Corrected</td><td>L</td><td>H</td></tr><tr><td>Incorrectable</td><td>L</td><td>L</td></tr></table>		CORR	ERROR	No error	H	H	Corrected	L	H	Incorrectable	L	L
	CORR	ERROR													
No error	H	H													
Corrected	L	H													
Incorrectable	L	L													
50		O	Unused (OPEN).												
51	PLL CLK	O	PLL clock output.												
52	PLL DI OUT	O	PLL data output.												
53	PLL CE	O	PLL chip enable port. Active : High												
54	LPF change-over	O	Low-pass filter changeover port.												
55	ST ON/OFF	O	Stereo/mono changeover port. Active : High												
56	ANT DUMP	O	Hi : Antenna sensitivity decreased. Active : High												
57	AV OUT	O	A/D nominal voltage output.												
58	FM S-METER	I	FM s-meter input. (Analog input)												
59 60 61 62 63		I	GND.												
64	A/D GND	I	A/D converter GND.												
65	A/D REF	I	Input of A/D converter nominal voltage.												
66	V _{ee}	-	Supply voltage of 5V.												
67	XT1	I	GND												
68	XT2	-	Unused (OPEN).												
69	V _{pp}	-	Connect to V _{ee} .												
70	X1	-	System clock.												
71	X2	-													
72	RESET	I	RESET input. Active : Low												
73	RDS RESET	O	Function to reset LC7070. Active : Low												
74	IF REQ	O	IF REQUEST output port. Active : High												
75	IF MUTE	O	IF MUTE output. Active : High												
76	DX/L0	O	DX/L0 changeover output port. Low : DX, High : Local												
77		I	GND												
78	FM SD	I	FM SD input port. Active : High												
79	CW IN	I	CW (Carrier Wave) detection input port. Active : Low												
80	ST IN	I	ST detection input port. Active : Low												

REF. NO.	PART NO.	DESCRIPTION	Q'TY	REF. NO.	PART NO.	DESCRIPTION	Q'TY
IC201	051-1250-00	IC TC4588F	1	C129	176-6097-00	Ceramic chip capacitor 6pF CH	1
IC902	051-1272-00	IC μPC2410HF	1	C210	176-6811-00	Ceramic chip capacitor 80pF CH	1
IC103	051-1282-00	IC TA7372P	1	C104,222	177-1042-05	Ceramic chip capacitor 0.1μF	2
IC403,404	051-1292-00	IC NJM4565M-D	2	C131	177-2242-05	Ceramic chip capacitor 0.22μF	1
IC901	051-1301-22	IC μPD75006GB-5B2-3B4	1	C117,320,326	177-3332-05	Ceramic chip capacitor 0.033μF	3
IC102	051-1323-05	IC LC721BM	1	C115,116,128	177-2057,212	Ceramic chip capacitor 0.047μF	9
IC604	051-1375-35	IC	1	C205,227,229,235	177-4732-05	Ceramic chip capacitor 0.068μF	3
IC104	051-1380-20	IC μPD75328GC-B05-3B8	1	C108,123,217	177-6832-05	Ceramic chip capacitor 0.086μF	3
IC402	051-1516-22	IC EV-2000-2	1	C101,102,107	177-112,114		
IC202	051-1525-00	IC TAB172AF	1	118,122,125	177-112,114		
IC608	051-1541-10	IC μPD75516GF-435-3B8	1	134,142	177-112,114		
X601	060-0100-01	Buzzer	1	C151,153,204	178-1032-05	Ceramic chip capacitor 0.01μF	32
X301	060-0115-02	Ceramic resonator 19kHz	1	230,241,303	178-1032-05	Ceramic chip capacitor 0.01μF	32
SUP101,102	060-0122-10	Surge protector	2	304,312,318	178-1032-05	Ceramic chip capacitor 0.01μF	32
X102,602,901	060-0130-50	Ceramic resonator 4.19MHz	3	614,615,621	178-1032-05	Ceramic chip capacitor 0.01μF	32
X302	060-0146-50	Ceramic resonator 4.0MHz	1	622,623,903	178-1032-05	Ceramic chip capacitor 0.01μF	32
BPF102	060-0177-00	Band pass filter BPF-K5-M2T	1	907,909	178-1032-05	Ceramic chip capacitor 0.01μF	32
BPF101	060-0235-00	Band pass filter HFE027	1	C144,145	178-1532-05	Ceramic chip capacitor 0.015μF	2
DC101	060-0236-00	DC/DC converter	1	C232,322	178-2222-05	Ceramic chip capacitor 0.022μF	2
X201	060-0240-00	Ceramic resonator 19kHz	1	C219,233,321	178-2232-05	Ceramic chip capacitor 0.022μF	3
L503	060-0262-00	EMI-filter DSS310-55	1	C309,311	178-3323-05	Ceramic chip capacitor 3300pF	2
X101	061-1066-00	Crystal 7.2MHz	1	C326,228,401	178-4722-05	Ceramic chip capacitor 7000pF	4
Q113	100-1048-00	Transistor 2SA1048-O,Y,GR	1	C208	178-4732-05	Ceramic chip capacitor 0.047μF	1
Q818	100-1150-00	Transistor 2SA1150-O,Y	1	C319	178-6822-05	Ceramic chip capacitor 6800pF	1
Q115,461,616	100-1162-00	Transistor 2SA1162-O,Y,G	10	C231	042-0176-00	Electrolytic capacitor	1
Q612,813,614				C619	042-0200-00	Variac capacitor 10V47μF	1
Q617,618,901				C620	042-0450-00	Alum-electrolytic capacitor 6.3V470μF	1
Q114	100-1297-00	Transistor 2SA1297-Y,GR	1	C613,516,815	179-2273-23	Electrolytic capacitor 10V22μF	4
Q605,608,903	100-1431-00	Transistor 2SA1431-O,Y	4	C517,518	179-2283-31	Electrolytic capacitor 16V2200μF	2
Q203	102-2712-00	Transistor 2SC2712-O,Y,G,L	1	C203,209	179-4763-32	Electrolytic capacitor 16V47μF	2
Q101,106,105				C625	179-4773-33	Electrolytic capacitor 16V470μF	1
Q106,108,109				C238	182-1043-82	Electrolytic capacitor 50VO,1μF	1
Q107,108,110				C151,236,237	182-1053-82	Electrolytic capacitor 50V1μF	8
Q108,109,111				C239,501,502	182-1053-82	Electrolytic capacitor 50V1μF	8
Q204,507,804	125-2004-03	Transistor RN1403	8	C132,218	182-1053-83	Electrolytic capacitor 50V1μF	2
Q607	125-2004-06	Transistor RN1406	1	C211,216,234	182-1063-32	Electrolytic capacitor 18V10μF	7
R657	032-0084-00	Fuse resistor 1/4W100	1	C201,205,420	182-1063-33	Electrolytic capacitor 16V10μF	5
C606,612	173-1031-10	Polyester capacitor 0.01μF	2	C221,422	182-1063-33	Electrolytic capacitor 16V10μF	5
C514,615	173-1041-10	Polyester capacitor 0.1μF	2	C417,418	182-1066-32	Electrolytic capacitor 18V1μF NP	2
C519~826	173-1241-10	Polyester capacitor 0.12μF	8	C207,407,601	182-1073-22	Electrolytic capacitor 10V100μF	5
105,106				C906	182-1073-32	Electrolytic capacitor 16V100μF	1
C29B~141	175-1011-00	Ceramic chip capacitor 100pF CH	7	C214	182-2253-83	Electrolytic capacitor 50V2.2μF	1
224				C624	182-2263-32	Electrolytic capacitor 18V22μF	1
C301,310,315	176-1021-00	Ceramic chip capacitor 1000pF CH	10	C111	182-3363-42	Electrolytic capacitor 25V33μF	1
506~508				C130	182-4753-52	Electrolytic capacitor 35V4.7μF	1
C135,137	176-1801-00	Ceramic chip capacitor 18pF CH	2	C609	182-4756-52	Electrolytic capacitor 35V4.7μF NP	1
C228	176-2201-04	Ceramic chip capacitor 22pF CH	1	C213	182-4763-12	Electrolytic capacitor 6.3V47μF	1
C221	176-2701-00	Ceramic chip capacitor 27pF CH	1	C109	182-4763-32	Electrolytic capacitor 16V47μF	1
C240	176-3311-00	Ceramic chip capacitor 330pF CH	1	C120	182-4763-42	Electrolytic capacitor 25V47μF	1
C202	176-4711-00	Ceramic chip capacitor 470pF CH	1	C305,619	183-1043-62	Electrolytic capacitor 50VO,1μF	2
				C124,317,318	183-1053-62	Electrolytic capacitor 50V1μF	12
				C227,403,404	183-1053-62	Electrolytic capacitor 50V1μF	12
				518,605,908	183-1053-62	Electrolytic capacitor 50V1μF	12
				C160,202,306	183-1063-32	Electrolytic capacitor 16V10μF	18
				C413,414,419	183-1063-32	Electrolytic capacitor 16V10μF	18
				602,603,810	183-1063-32	Electrolytic capacitor 16V10μF	18
				C103,308,313	183-2263-32	Electrolytic capacitor 18V22μF	3

REF.NO.	PART NO.	DESCRIPTION	Q'TY
C805	183-3383-42	Electrolytic capacitor 25V33μF	1
C113,119	183-4743-62	Electrolytic capacitor 35V0.47μF	2
C307	183-4753-52	Electrolytic capacitor 35V4.7μF	1

REF.NO.	PART NO.	DESCRIPTION	Q'TY
C323,324,325	183-4783-12	Electrolytic capacitor 6.3V47μF	3
C121,128,133 143,152,314	183-4763-32	Electrolytic capacitor 16V47μF	6
C410,411	183-6843-62	Electrolytic capacitor 50V0.68μF	2

◎PRE AMP P.W.B (Tape mechanism section)

REF.NO.	PART NO.	DESCRIPTION	Q'TY
IC2	051-0620-00	IC LA2000C	1
IC1	051-0714-01	IC TA7705F	1
Q1	125-2003-02 (102-3402-00)	Transistor RN1202 (2SC3402)	1
C15	172-3331-10	Polyester capacitor 0.033μF	1
C6,9	173-1231-10	Polyester capacitor 0.012μF	2
C12	173-4721-10	Polyester capacitor 4700pF	1

REF.NO.	PART NO.	DESCRIPTION	Q'TY
C1~4	173-5611-10	Polyester capacitor 560pF	4
C14	183-1053-62	Electrolytic capacitor 50V1μF	1
C7	183-1063-32	Electrolytic capacitor 16V10μF	1
C13	183-4743-62	Electrolytic capacitor 50V0.47μF	1
C10,11	183-4753-52	Electrolytic capacitor 35V4.7μF	2
C5,8	183-4763-12	Electrolytic capacitor 6.3V47μF	2
C16	183-4763-32	Electrolytic capacitor 16V47μF	1

◎BOTTOM P.W.B (Tape mechanism section)

REF.NO.	PART NO.	DESCRIPTION	Q'TY
SW4	013-3937-00	Switch	1
SW1,2	013-3863-00	Switch	2

REF.NO.	PART NO.	DESCRIPTION	Q'TY
SW3	013-3863-01	Switch	1
IC3,4	051-1114-00	IC NJL5161K-P	2

◎ How to read resistor

Resistors are deleted from the table of electric components, except special resistors.
They can be converted to product Nos. as follows.

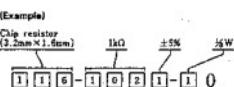
Film resistor (Carbon film resistor/Metal film resistor)

Classification	Resistance *	Tolerance of the value of resistance	Rated power		Shape
			0	± 2%	
1.1.1 (Carbon film resistor)	Example	1 ± 5%	1	1/2W	1 Horizontal
	32Ω=330	2	2	1/2W	2 Vertical
	33kΩ=333	3	3		
		4	4	1/2W	4
		7	7	1/2W	
		8	8	1/2W	
		9	9	1/2W	
		0	1	1W	0
		1 ± 5%	2	2W	1 Horizontal
		2	3	3W	2
1.1.4 (Metal film resistor)	Example	0 for 9Ω resistor	0	for 9Ω resistor	
	33Ω=330	1 ± 5%	1	1/2W	
	33kΩ=333	2 ± 10%	2		
		0 for 9Ω resistor	0	for 9Ω resistor	
		1 ± 5%	1	1/2W	
		2 ± 10%	2		
		0	0		
		1 ± 5%	1	1/2W	
		2 ± 10%	2		
		0 for 9Ω resistor	0	for 9Ω resistor	



Note 1. The first two of three digits representing resistance are effective digits and the last one represents number of "0" following this.
Unit is given in ohm (Ω).

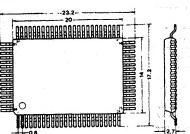
Classification	Resistance *	Tolerance of the value of resistance	Rated power		Shape
			0	± 2%	
1.1.6	Example	0 for 9Ω resistor	0	for 9Ω resistor	
	33Ω=330	1 ± 5%	1	1/2W	
	33kΩ=333	2 ± 10%	2		
		0 for 9Ω resistor	0	for 9Ω resistor	
		1 ± 5%	1	1/2W	
		2 ± 10%	2		
		0	0		
		1 ± 5%	1	1/2W	
		2 ± 10%	2		
		0 for 9Ω resistor	0	for 9Ω resistor	
1.1.7	Example	0 for 9Ω resistor	0	for 9Ω resistor	
	33Ω=330	1 ± 5%	1	1/2W	
	33kΩ=333	2 ± 10%	2		
		0 for 9Ω resistor	0	for 9Ω resistor	
		1 ± 5%	1	1/2W	
		2 ± 10%	2		
		0	0		
		1 ± 5%	1	1/2W	
		2 ± 10%	2		
		0 for 9Ω resistor	0	for 9Ω resistor	
1.1.8	Example	0 for 9Ω resistor	0	for 9Ω resistor	
	33Ω=330	1 ± 5%	1	1/2W	
	33kΩ=333	2 ± 10%	2		
		0 for 9Ω resistor	0	for 9Ω resistor	
		1 ± 5%	1	1/2W	
		2 ± 10%	2		
		0	0		
		1 ± 5%	1	1/2W	
		2 ± 10%	2		
		0 for 9Ω resistor	0	for 9Ω resistor	
1.1.9	Example	0 for 9Ω resistor	0	for 9Ω resistor	
	33Ω=330	1 ± 5%	1	1/2W	
	33kΩ=333	2 ± 10%	2		
		0 for 9Ω resistor	0	for 9Ω resistor	
		1 ± 5%	1	1/2W	
		2 ± 10%	2		
		0	0		
		1 ± 5%	1	1/2W	
		2 ± 10%	2		
		0 for 9Ω resistor	0	for 9Ω resistor	



μPD75516GF-436-3B9 051-1541-10 Master Micro Computer

051-1541-10 is a performance improved device of 051-1541-02.

I. Outward Form



II. Description

No.	Symbol	I/O	Function
1	NC	-	Connect to GND.
2	VDD	-	Connect to the VDD terminal (5V ± 10%).
3	REM-1	O	Tuner, controller, and amplifier power control.
4	REM-2	O	Connect to the ACC detection port of the slave controller. Power control around the controller.
5	LOUD	O	LOUD control port.
6	DK OUT	O	DK output control port. "L" when traffic information interrupt. Normally "H".
7	T/R	I	When mechanical mechanism is used: TAPE=H, RADIO=L When not used: GND
8	FWD/REV	I	When mechanical mechanism is used: FWD="L", REV="H" When not used: GND
9	MECH/SFX	I	Mechanical mechanism=L, SF-X=H.
10	LCD-BUST	I	Connect to the BUST terminal of the LCD driver μPD7225.
11	LCD/RESET	O	Connect to the RESET terminal of the LCD driver μPD7225.
12	LCD/C/D	O	Connect to the C/D terminal of the LCD driver μPD7225.
13	LCD-CS	O	Connect to the CS terminal of the LCD driver μPD7225.
14	REM4	O	FLAP power control. "H" during FLAP operation.
15	DI	I	Connect to the DI terminal of the 93C48.
16	LCD-DDO	O	Connect to the SI terminal of the LCD driver μPD7225.
17	LCD-SCKR	O	Connect to the SCK terminal of the LCD driver μPD7225.
18	NC	O	Specifies PPO and outputs LO.
19	K17	I	Key input terminal.
20	K18	O	Key output terminal.
21	KO3	I	GND terminal.
22	KOO	O	Key output terminal.
23	GND	-	GND terminal.
24	VOL-CS	O	Electronic VR. Connect to the CE terminal of the LC7537.
25	VOL-DDO	O	Connect to the DI terminal of the electronic VR. LC7537 and to the DI terminal of the EE-PROM.
26	VOL CLK	O	Connect to the CLK terminal of the electronic VR. LC7537 and to the SK terminal of the EE-PROM 93C48.
27	CS	O	Connect to the CS terminal of the EE-PROM 93C48.
28	LED	O	LED flashing control terminal.
29	CH1 LED	O	Connect to the driver input terminal of the TD62706. (LED illuminated when the channel IN8 is "H")
30	CH0 LED	O	4.096Hz output in the 3-minute mode. (Normally "L")
31	BEEP	O	4.096Hz output in the 3-minute mode. (Normally "L")
32	NC	I	Connect to GND.

II. When mechanical mechanism
(All momentary SW.)

In	Out	K00 (32pin)	K01 (31pin)	K02 (29pin)	K03 (28pin)	K04 (29pin)	K05 (29pin)
X11 (27pin)		SEEK/UP MANU/UP TRACK-UP	SEEK/DN/ MANU/DN TRACK-DN	MANU/UP/ EXIM/PSS TRACK-UP	MANU/DN/ EXIM/PSS TRACK-DN	MANU/UP/ EXIM/PSS TRACK-UP	MANU/UP/ EXIM/PSS TRACK-DN
X12 (26pin)							
X13 (25pin)							
X14 (24pin)							
X15 (23pin)							
X16 (22pin)							
X17 (21pin)							

NOTE: Some of the sets equipped with this microcomputer are not provided with all the above keys.

■ PARTS LIST:

④ Electrical section

⑤ ESCUTCHEON P.W.B

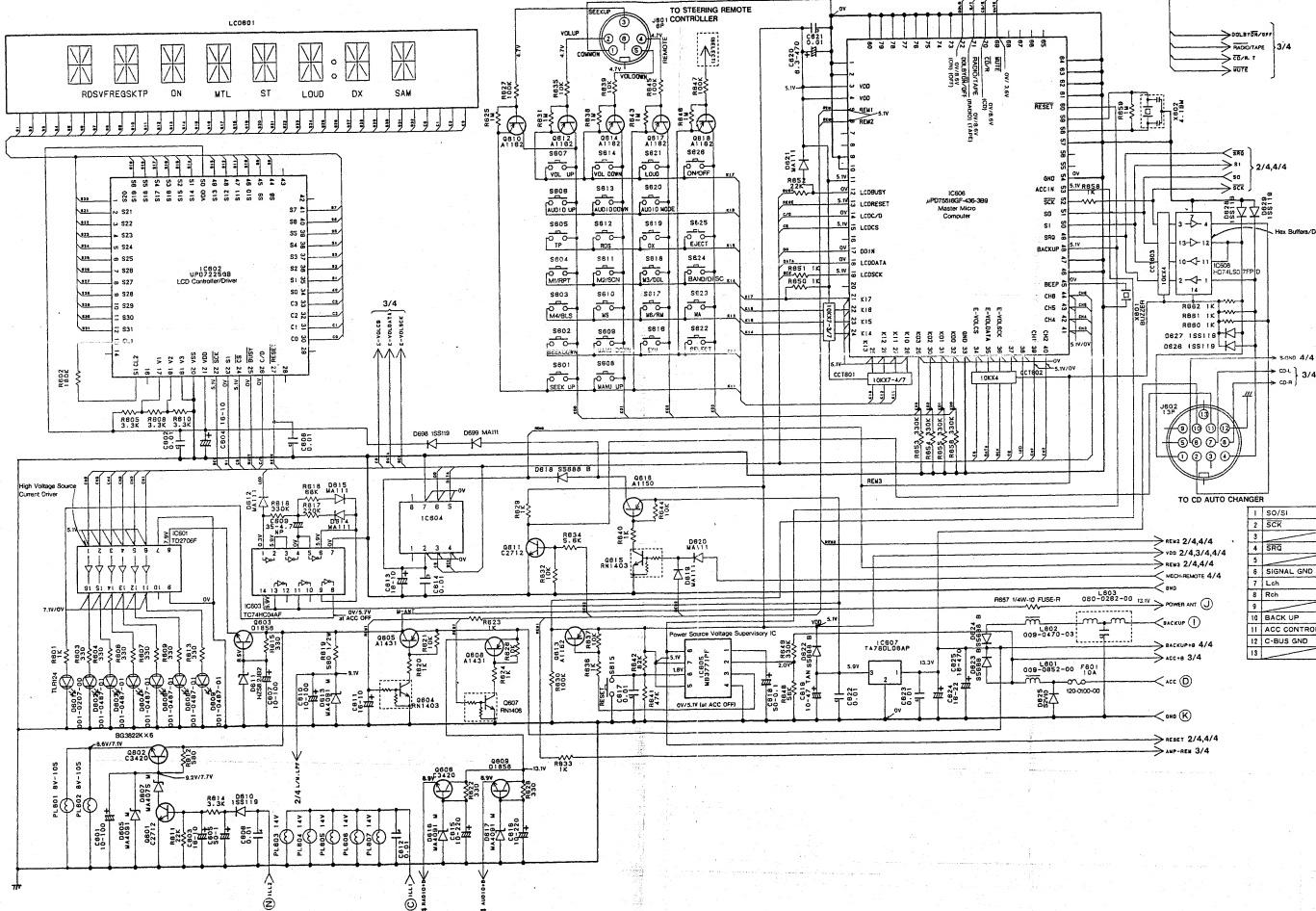
Note) Several different parts listed in the column are alternative parts. One of those parts is used in the set.

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REF.NO.	PART NO.	DESCRIPTION	Q'TY
D601	001-0207-00	LED TLR124	1	PL601,602	017-0376-02	Pilot lamp	2
D602-604	001-0487-01	LED BG3822K	6	IC602	051-1151-10	IC μPD7225GB	1
S601-626	013-3943-00	Switch	26	C602,608	178-1032-05	Ceramic chip capacitor 0.01μF	2
PL603-607	017-0345-09	Pilot lamp	5	LCD501	379-0364-07	Indicator	1

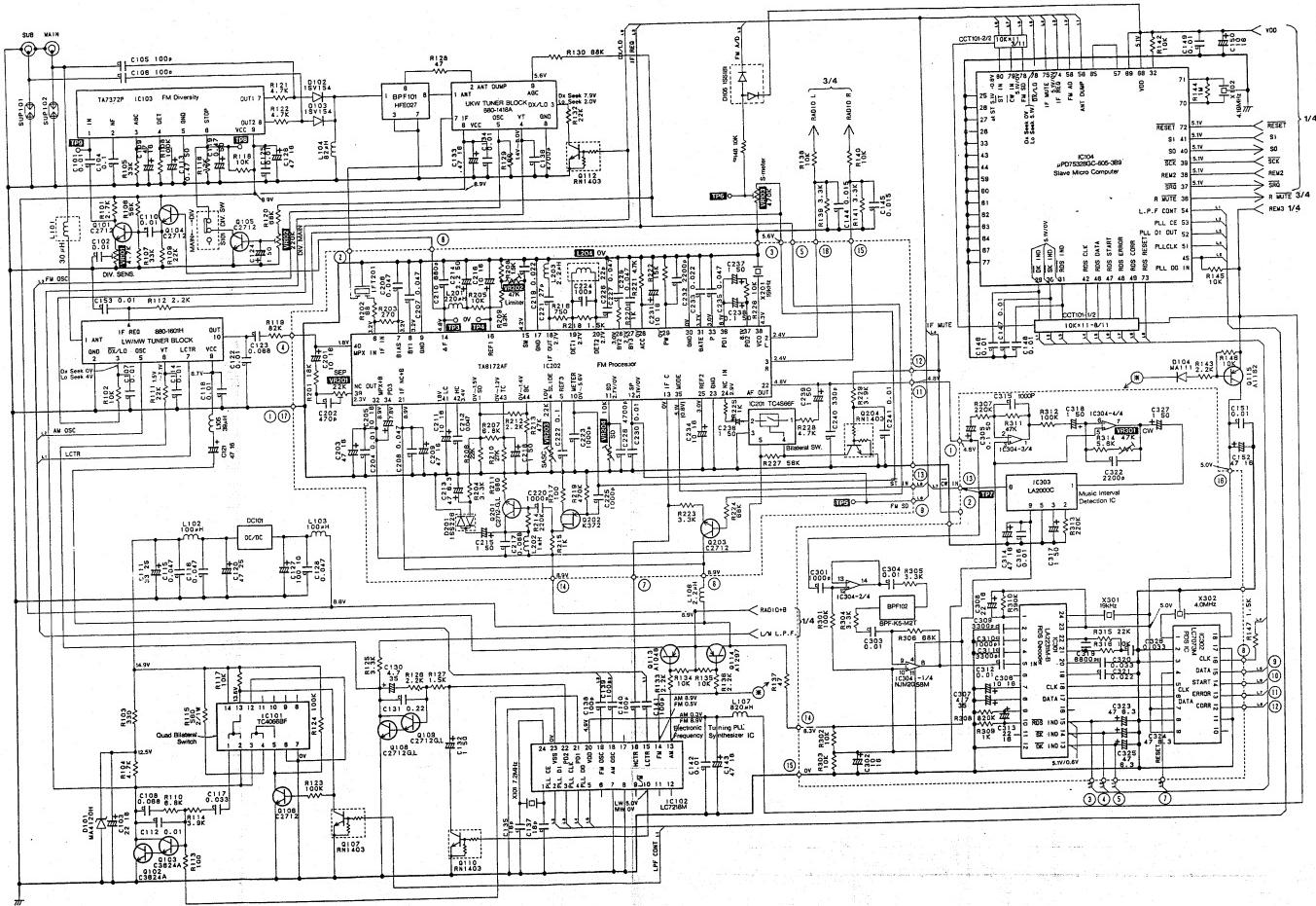
⑥ MAIN P.W.B

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REF.NO.	PART NO.	DESCRIPTION	Q'TY
D10,626,527 628,629,698	001-0330-00	Diode 1SS119	6	L106,203	010-2199-1B	Coil 2.2uH	2
D26	001-0334-00	Diode DSA17B	1	L104	010-2199-35	Coil B2uH	1
D265	(001-0334-50)	Diode (SD2V10)	1	L201	010-2199-40	Coil 220uH	1
D105	001-0358-05	Diode 1SS181	1	L105	010-2230-29	Coil 39uH	1
D201	001-0367-00	Diode 1SS22B	1	VR101	012-3808-05	Variable resistor 4.7kΩ	1
D402	001-0377-32	Diode MA4075	1	VR102	012-3808-11	Variable resistor 220kΩ	1
D402	(001-0376-32)	Diode (MTZJ8.6B)	1	VR103	012-3808-13	Variable resistor 47kΩ	1
D73	001-0400-32	Diode (HZS5.6J82)	1	VR202	012-4318-09	Variable resistor 47kΩ	1
D607	001-0377-41	Diode MA4075M	1	VR202,401	012-4863-06	Variable resistor 10kΩ	3
D611	001-0377-44	Diode MA4082M	1	VR201,203	012-4863-07	Variable resistor 22kΩ	2
D611	(001-0376-45)	Diode (MTZJ8.2C)	1	VR301	012-4863-09	Variable resistor 47kΩ	1
D205,613,818	001-0400-44	Diode (HZS2.2B2)	1	S101	013-3894-00	Switch	1
D101	001-0377-47	Diode MA4091M	4	RY401	014-0510-02	Relay	1
D101	(001-0376-59)	Diode MA4120H	1	CCT1602,603	050-0077-02	Component circuit 10kΩx4	2
D101	(001-0400-57)	Diode (MTZJ13A)	1	CCT1601	050-0088-03	Component circuit 10kΩx1	1
J01,618,622 623,624,501 902	001-0466-00	Diode SS6888	7	CCT1901	050-0090-02	Component circuit 10kΩx10	1
T04,501,502 D15,619,620,621 699	001-0516-00	Diode MA111	10	CCT1101	050-0101-01	Component circuit 10kΩx11	1
J01,618,622 623,624,501 902	001-0516-00	Diode 1SV164	2	IC608	051-0160-56	IC TD74LS07PFD	1
IFT201	005-1022-51	IF-transformer	1	IC101	051-0267-05	IC TC4068B	1
L204	005-1029-00	IF-transformer	1	IC304	051-0558-01	IC NJM2058M	1
L602	009-0470-03	Choke	1	IC303	051-0620-00	IC LA2000C	1
L601	009-0652-00	Choke	1	IC803	051-0895-05	IC TC74HC04AF	1
L102,103	010-1892-07	Coil 100uH	2	IC805	051-0899-05	IC MB37710PF(G)	1
L101	010-2003-04	Coil 30uH	1	IC801	051-0942-05	IC TD62708P(CLAR)	1
L107	010-2174-35	Coil 820uH	1	IC401	051-1038-01	IC CXA1102M	1
L202	010-2174-36	Coil 1mH	1	IC501,502	051-1111-20	IC TA8201AL	2
IC301	051-1144-10	IC LA2231M-B	1	IC302	051-1150-20	IC LC7073M	1
IC607	051-1188-01	IC TA78DL06AP	1				

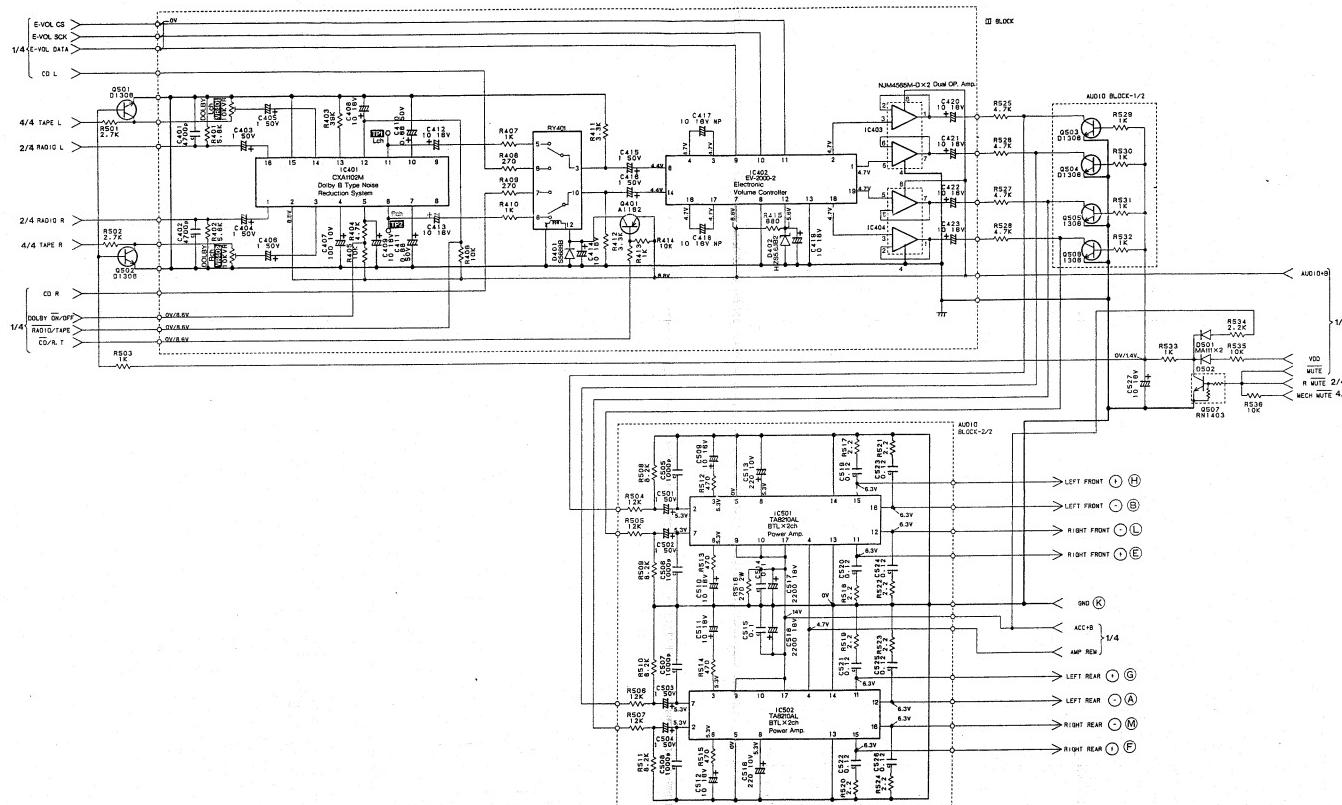
CIRCUIT DIAGRAM: 1/4



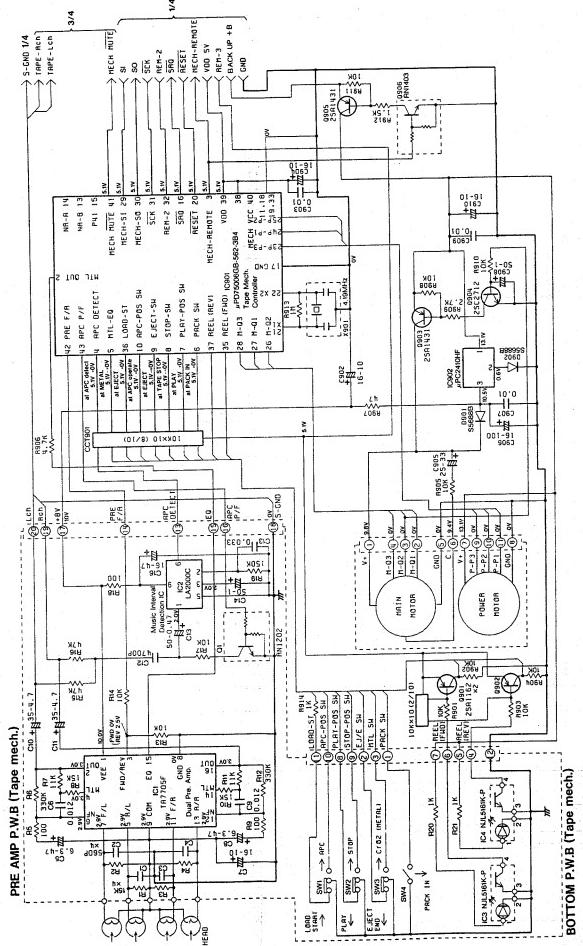
CIRCUIT DIAGRAM: 2/4



■ CIRCUIT DIAGRAM: 3/4



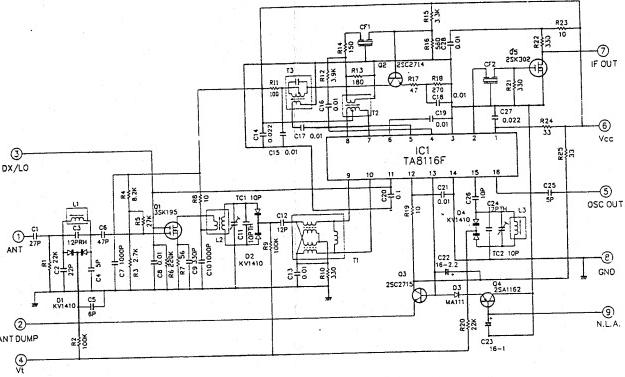
■ CIRCUIT DIAGRAM: 4/4



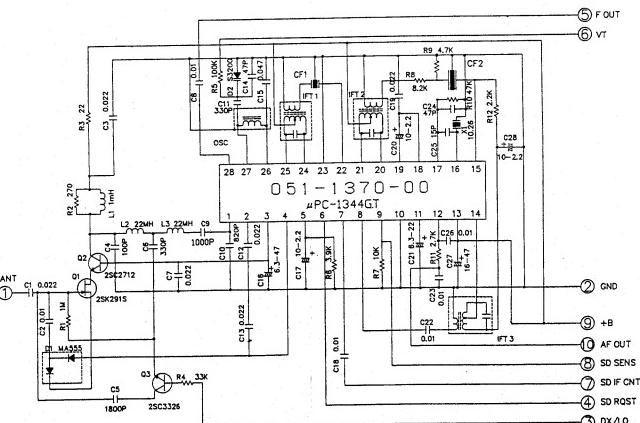
- 17 -

PU-9594A-D

■ BLOCK CIRCUIT DIAGRAM:
■ UKW TUNER BLOCK Ass'y 880-1418A



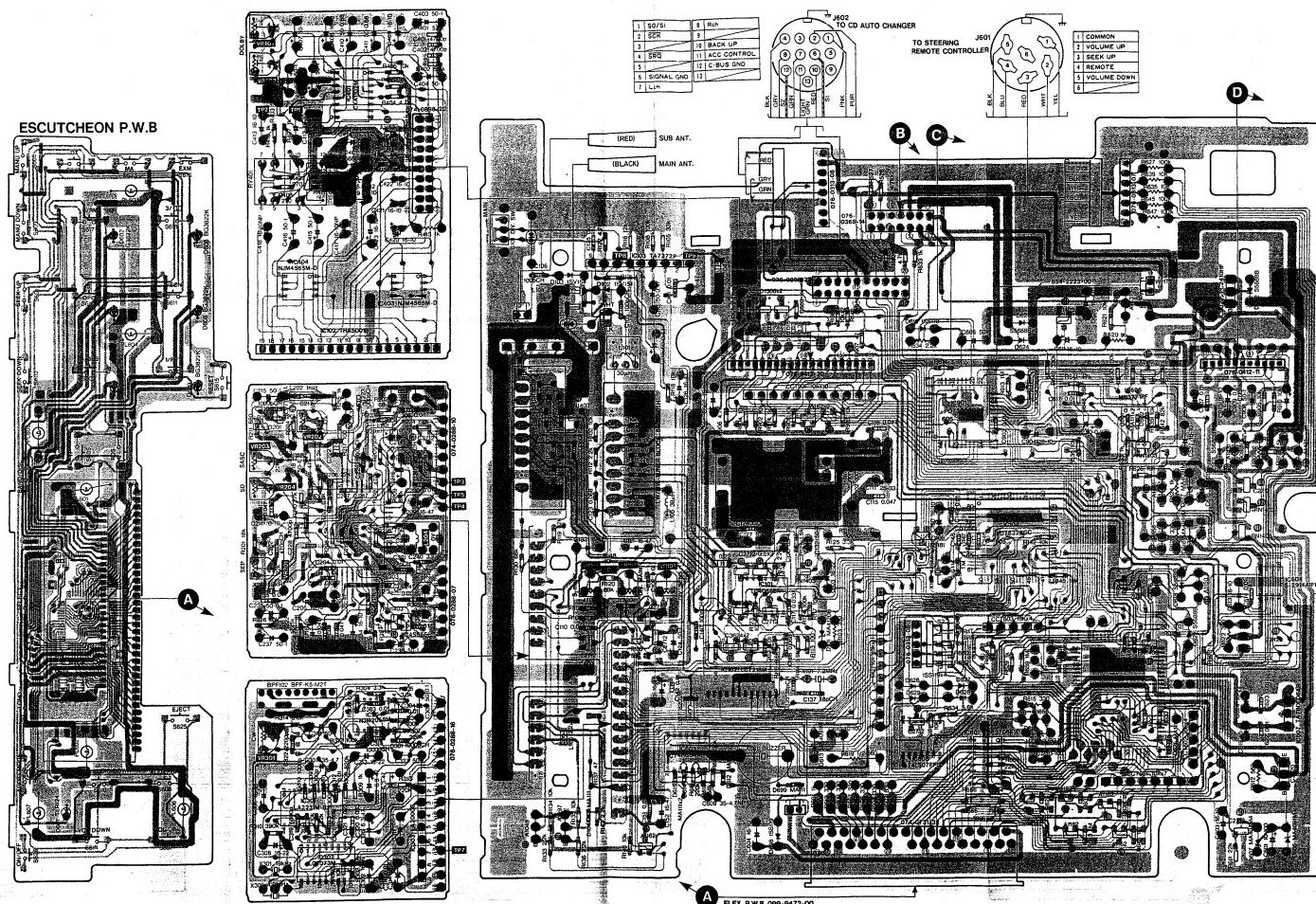
■ LW/MW TUNER BLOCK Ass'y 880-1601H

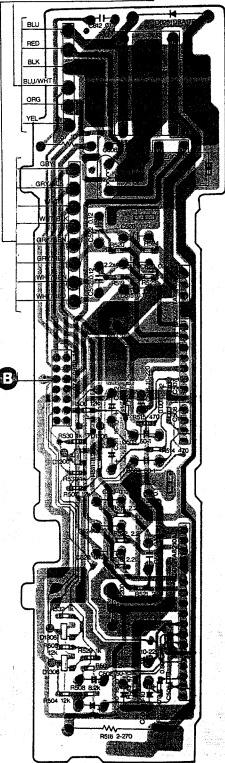
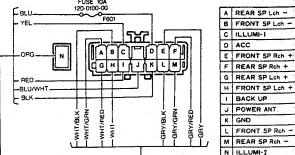
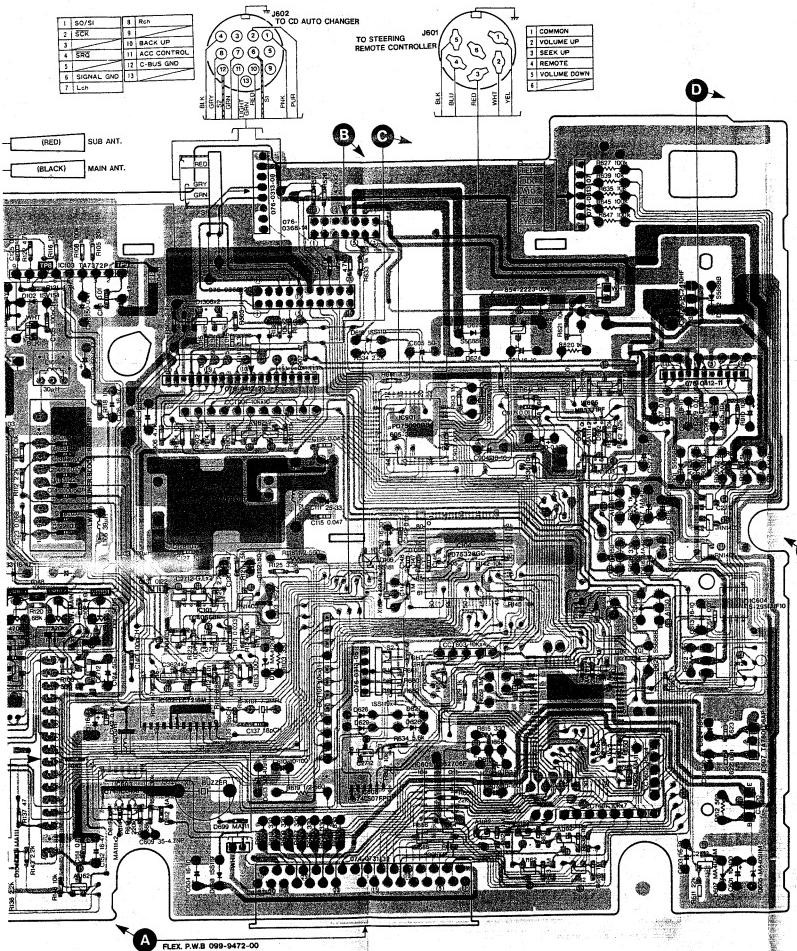


- 18 -

PU-9594A-D

■ PRINTED WIRING BOARD:

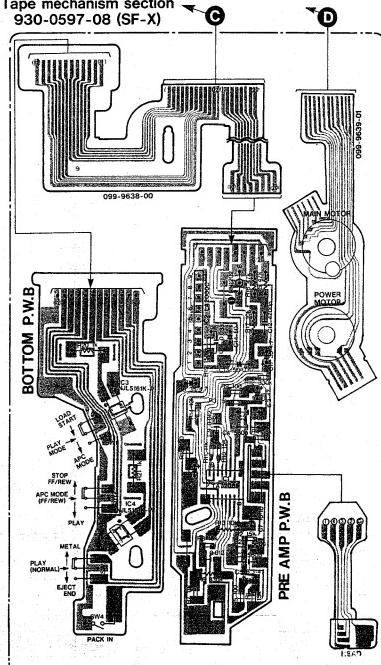




CHIP PARTS SYMBOL

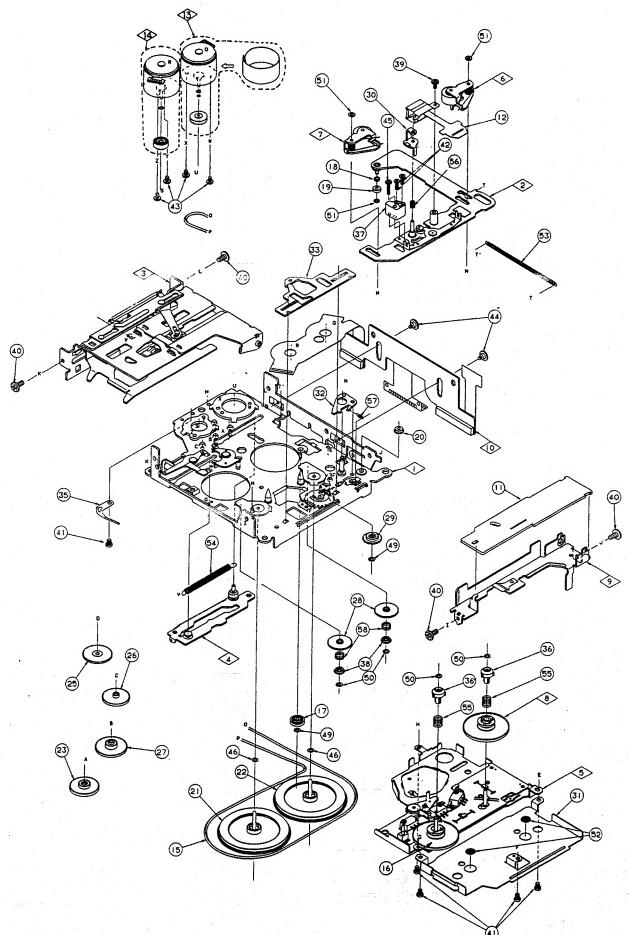
- [Symbol: Box] Chip resistor
- [Symbol: Box with diagonal line] Chip capacitor
- [Symbol: Wavy line] Chip coil
- [Symbol: Double line] Chip jumper wire
- [Symbol: Triangle] Chip diode
- [Symbol: Transistor] Chip transistor
- [Symbol: Transistor with 'B' and 'E' labels] Chip transistor (Top view)

Tape mechanism section
930-0597-08 (SF-X)



■ EXPLODED VIEW • PARTS LIST:

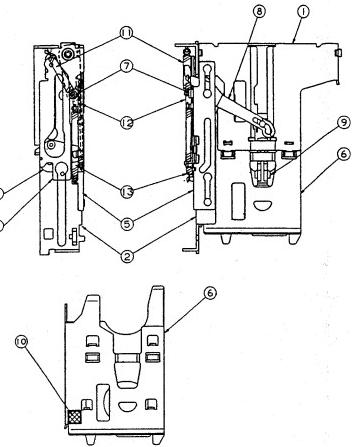
©Tape mechanism section 930-0597-08 (SF-X)



REF.NO.	PART NO.	DESCRIPTION	Q'TY
1	960-4322-03	Deck plate ass'y	1
2	960-4005-10	Head plate ass'y	1
3	960-4320-04	Eject sub ass'y	1
4	960-4011-07	Mode plate ass'y	1
5	960-4346-01	Bottom sub ass'y	1
6	960-4050-06	Roller sub ass'y F	1
7	960-4051-06	Roller sub ass'y R	1
8	960-4336-01	Reel ass'y F	1
9	960-4117-01	P.W.B frame ass'y	1
10	099-0693-01	P.W.B ass'y	1
11	099-9637-00	PRE P.W.B	1
12	011-0316-11	Head	1
13	SMA-123-100	Main motor ass'y	1
14	SMA-122-103	Power motor ass'y	1
15	602-0111-00	Belt	1
16	960-4337-01	Reel ass'y R	1
17	604-0036-05	Tension pulley	1
18	610-0316-01	Head-P-roller-M	1
19	610-0313-02	Driving roller	1
20	610-0347-00	Head-P-G-roller	1
21	611-0084-03	Flywheel R	1
22	611-0085-02	Flywheel F	1
23	613-0122-01	Shift-P gear	1
25	613-0246-00	Gear A	1
26	613-0247-00	Gear B	1
27	613-0248-00	Gear C	1
28	613-0306-01	Play idler gear	2

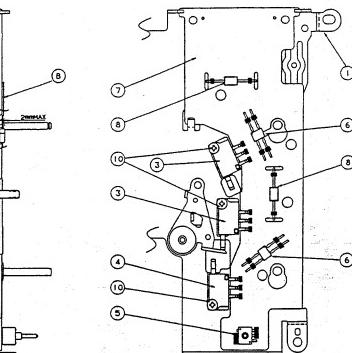
REF.NO.	PART NO.	DESCRIPTION	Q'TY
29	613-0250-00	Change gear A	1
30	630-2342-04	Adjust link	1
31	630-2345-05	Flywheel plate	1
32	630-2374-01	CH-hold plate	1
33	630-2343-06	Change plate	1
35	630-2408-01	Motor spring	1
36	631-2024-00	Slide bush	2
37	631-0650-00	Adjust base	1
38	631-0637-00	Idler roller	2
39	714-2003-81	Machine screw (M2x3)	1
40	716-1470-00	Screw	4
41	716-0717-10	Steel screw	5
42	716-0833-02	Azimuth screw	2
43	716-0835-00	Screw	4
44	716-1523-00	P.W.B-G-screw	2
45	739-2090-17	Precision screw	1
46	746-0624-00	Washer	2
49	746-0724-00	Washer	2
50	746-0857-00	Washer	4
51	746-0768-00	Washer	3
52	746-0767-00	Washer	2
53	750-2715-02	Head-P-spring	1
54	750-3019-00	Mode-P-spring	1
55	750-3033-01	Slide spring	2
56	750-2721-02	Azimuth spring	1
57	750-2725-00	CH-hold spring	1
58	750-2793-01	Idler spring	2

©EJECT SUB ASS'Y 960-4320-04



REF.NO.	PART NO.	DESCRIPTION	Q'TY
1	960-4007-05	Guide arm ass'y	1
2	960-4008-05	Side frame ass'y	1
3	960-0409-06	Eject-P-ass'y	1
4	960-4010-05	Eject link ass'y	1
5	960-4057-05	Loading-P-ass'y	1
6	606-0090-10	Pack guide	1
7	610-0314-03	Guide-A-roller	1
8	630-2340-01	Swing arm	1
9	631-0599-04	Pack stopper	1
10	746-0816-01	Pack set washer	1
11	750-2716-01	Swing A spring	1
12	750-2719-01	Guide arm spring	1
13	750-2791-01	Load-P-spring	1

©BOTTOM SUB ASS'Y 960-4346-01

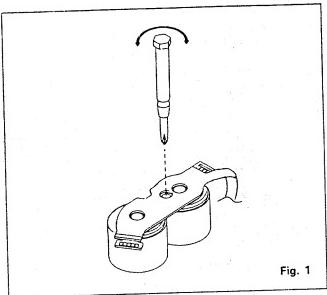


REF.NO.	PART NO.	DESCRIPTION	Q'TY
1	960-4096-04	Bottom-P-ass'y	1
3	013-3863-00	Switch	2
4	013-3863-01	Switch	1
5	013-3937-00	Switch	1
6	051-1114-00	IC (NJL5161K-P)	2
7	099-9394-01	Bottom P.W.B	1
8	111-1021-91	Film resistor (1kΩ)	2
10	716-0834-00	Screw	3

■ADJUSTMENT OF MECHANISM:

1. Adjustment of tape speed

Reproducing the 3kHz speed tape, adjust VR inside the motor so that the reading of frequency counter becomes within the range of 2990Hz to 3100Hz. (Refer to Fig. 1)

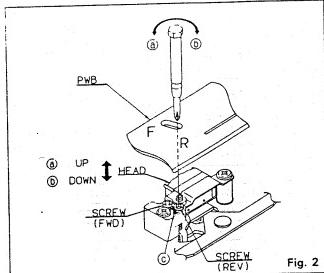


2. Adjustment of head azimuth

(1) Play back azimuth tape (10kHz, -10dB) and adjust the screw so that the peak of FWD and REV will be 10kHz. (Refer to Fig. 2)

As shown in the figure, ④ turn in the direction ⑤ tilts the head upward and a turn in the direction ⑥ tilts it downward.

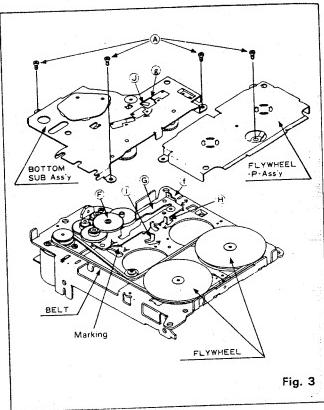
(2) After completion of adjustment, apply LOCK-TIGHT Bond to the ⑦ section. (Refer to Fig. 2)



■REPLACEMENT OF MECHANISM PARTS:

1. Replacement of belt, flywheel and reel base ass'y

- (1) Remove Screws ⑧ (4 pcs). (Refer to Fig. 3)
- (2) Remove the flywheel-P-ass'y and then the bottom sub ass'y.



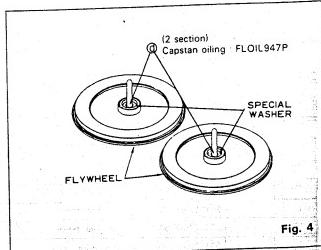
(3) Replace the belt with a new one.

*Pay attention so that oils such as MR paste do not stick to the belt.

Replace the flywheel with a new one. (Refer to Fig. 4).

*When replacing the flywheel, apply FLOIL947P to Section ⑨.

Note: Use specified oils.



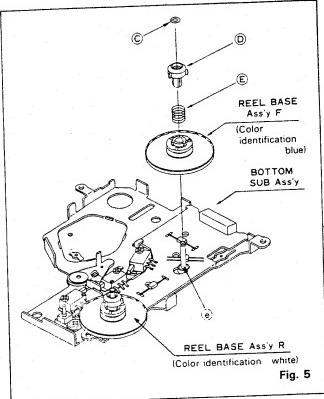
2. Replacement of reel base ass'y

(Refer to Fig. 5)

- (a) Remove the special washer ⑩ (φ3.2 split).
- (b) Remove the slide bushing ⑪ and slide spring ⑫.
- (c) Replace the reel base ass'y with a new one.

*When replacing the reel base ass'y, apply FLOIL G-488 to the section ⑬ of the reel shaft. Also check F and R sides of the reel base ass'y. The F side of the reel base ass'y is identified with blue, and the R side with white.

- (d) Reassemble the reel base ass'y in the reverse order of (a) and (b).



- (5) Following replacement of the belt, flywheel and reel base ass'y, remove the gear C ⑮ and move Section ⑯ of the mode plate ass'y ⑭ in the arrowed direction to make marks A-A fit. (Refer to Fig. 3).

*Moving the mode plate ass'y ⑭ without removing the gear C ⑮ causes chipping of gears.

- (6) Hold ⑮ again.
- (7) Move links of ⑯ and ⑯ to the arrowed direction.

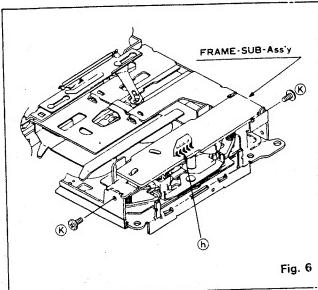
(8) Push the link ⑯ of the bottom sub ass'y toward the arrowed direction through the hole ⑯ so that the reel base ass'y is placed below the flywheel. Holding this condition, drop the bottom sub ass'y.

- (9) Reassemble the flywheel-P-ass'y and fasten it with Screws ⑧ (4 pcs).

2. Replacement of head

(1) Remove solder from 5 points at Section ⑯. (Refer to Fig. 6).

- (2) Loosen Screws ⑯ (2 pcs.) to remove the frame sub ass'y.

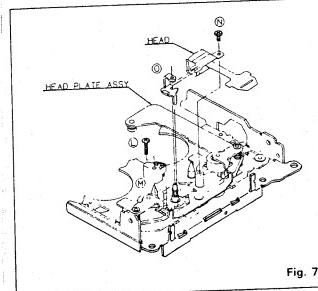


- (3) Remove the screw ⑯ and then adjust base ⑯. (Refer to Fig. 7)

(4) Remove the screw ⑯, lift adjust-link ⑯ and replace the head.

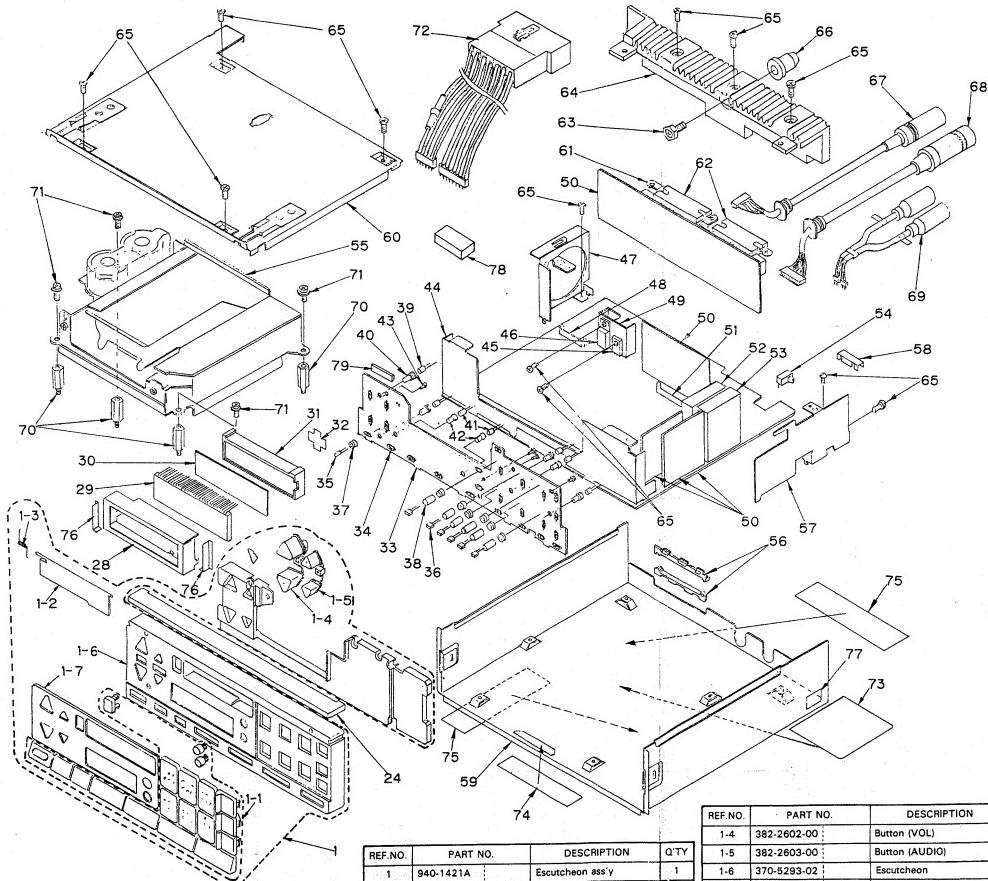
(5) Reassemble the frame sub ass'y in the reverse procedures of (1) to (4).

(6) Perform the azimuth adjustment of the head.



■ EXPLODED VIEW • PARTS LIST:

©Main section



REF.NO.	PART NO.	DESCRIPTION	Q'TY
1	940-1421A	Escutcheon ass'y	1
1-1	947-0295-01	Button ass'y	1
1-2	320-0391-25	Dustproof cover	1
1-3	750-2309-01	Spring	1

PU-9594A-D

REF.NO. PART NO. DESCRIPTION Q'TY

1-4	382-2602-00	Button (VOL)	1
1-5	382-2603-00	Button (AUDIO)	1
1-6	370-5293-02	Escutcheon	1
1-7	372-3182-03	Dial plate	1
24	335-3682-00	Holes cover	1
28	330-9854-00	LCD holder	1

PU-9594A-D

REF.NO.	PART NO.	DESCRIPTION	Q'TY
29	379-0364-07	Indicator	1
30	335-3788-02	Color filter	1
31	335-3683-00	Back light	1
32	347-3492-00	Illum. paper	1
33	099-9460-01	Escutcheon P.W.B	1
34	013-3394-00	Switch	26
35	001-0207-00	LED (RED/D601)	1
36	001-0487-01	LED (GREEN/D602~D604, 606, 608,609)	6
37	340-1529-00	Spacer (D602~D604,606, 608,609)	7
38	345-7252-00	Shade (D602~D604,606, 608,609)	6
39	017-0345-09	Pilot lamp (PL603~607)	5
40	345-3814-38	Unit rubber (PL602,607)	5
41	017-0376-02	Pilot lamp (PL601,602)	2
42	345-7148-00	Lamp cap (PL601,602)	2
43	716-0778-00	Wave screw	4
44	309-0613-01	Front plate	1
45	102-3420-00	Transistor (2SC3420)	1
46	051-1188-01	IC (TA780L06AP)	1
47	330-9660-00	Fan holder	1
48	076-0412-11	Plug	1
49	330-9695-00	TR holder	1
50	099-9923-01	Main P.W.B	1
51	076-0412-20	Plug	1
52	880-1601H	LW/MW Tuner block ass'y	1
53	880-1418A	UKW Tuner block ass'y	1
54	013-3894-00	Switch	1
55	930-0597-08	Tape mechanism (SF-X)	1
56	335-3685-00	Lead clamp	2
57	330-9659-00	Antenna holder	1
58	347-3498-00	Insulator	1
59	311-1502-01	Lower case	1
60	303-0400-00	Upper cover	1
61	331-0091-00	IC holder	1
62	051-1111-20	IC (TA8210AL)	2
63	710-5014-31	Hex. bolt	1
64	313-1533-00	Heat sink	1
65	714-2606-81	Machine screw (M2.6x6)	12
66	345-3653-01	Spacer	1
67	854-2454-01	Extension lead (6PIN)	1
68	854-2455-00	Extension lead (13PIN)	1
69	092-0648-00	Antenna receptacle	1
70	716-0875-00	Spacer	4
71	716-0878-00	IT-screw	4
72	854-2432-01	Extension lead	1
73	286-7687-00	Set plate	1
74	347-2385-00	Shade	1
75	347-3503-00	Label	2
76	347-3501-00	Shade	2
77	347-2004-00	Shade	1
78	347-3508-00	Shade	1
79	345-4032-00	Spacer	1